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SB

STATISTICAL BULLETIN

Vol 65 No 4 Oct-Dec 1984

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Metropolitan Insurance Companies

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Postage paid at New York, N.Y. Postmaster send address changes to above address.

Letters will be published at the discretion of the editor as space permits and subject to editing and abridgment. They should be typewritten, double spaced. Send to:
Statistical Bulletin, 15-1
Metropolitan Life Insurance Company
One Madison Avenue, New York, N.Y. 10010

From the Editor's Desk

Next time you pass a typical neighborhood elementary school, ask yourself a question: In 15 years, how readily will it assimilate a student body that is 10 percent larger? The gist of that question emerges from a study by Metropolitan Life Insurance Company and is reported in this issue of *SB*. Your local school district's tax and management problems aside, the likelihood of such growth after the recent 15-year period of contraction in school attendance, raises potentially important new issues about teachers, teaching, and the opportunities to improve learning for today's children/tomorrow's adults.

As Wisconsin's Governor Anthony Earl reminds us in his accompanying editorial, the school environment can be critical to help children master selected skills for responsible health behavior. Can we as a nation respond to this challenge, and make health behavior education in schools the firm base upon which our nation's future health can stand? The health statistical indicators of the year 2039 (when today's kindergarteners will be 55 years old) should reflect the extent to which the Governor's words could become prophetic.

"Nuclear winter" is a chilling term that will be heard increasingly as the United States debates the use of nuclear weapons as the principal deterrent in national defense. In *Capsule Briefs*, *SB* abstracts two recent references on this important subject for readers seeking more information. The articles report the statistically estimated effects of many simultaneous nuclear weapons' detonations. The main conclusion is that catastrophic results would occur even for a war's "winner," because of the expected, voluminous worldwide atmospheric soot and dust pollution, the direct aftermath of multiple nuclear explosions.

Did you ever realize how many therapeutic drugs are dispersed in the United States each year? Or the dollars involved in their purchase? It is a subject of gargantuan proportions when analyzed as *SB* does this issue. The article provides a small window on the one part of that complex subject called medical care. Medication usage patterns are not an easy subject to master, but we hope you will be helped to understand its more important dimensions as a result of our report.

Finally, a subject that is not often analyzed: deaths from cirrhosis of the liver, as part of our continuing examination of regional health in the United States. Do you know, for example, in which parts of the United States cirrhosis risk seems lowest? Or highest? A disease strongly statistically associated with heavy alcohol consumption, cirrhosis is one of the 10 leading causes of death in the United States at this time.

This study is another reminder that there are grim, long-term consequences to drug and alcohol abuse which can originate in childhood. Thus, there is a continuing need to analyze preventive educational programs and their effectiveness. If my last comment seems familiar, it is. I'm back near where I started.

See you next issue.

Charles B Arnold

The Statistical Bulletin will publish comment and criticism from readers about its contents. Alternate interpretations of data analyses or different points of view about subjects are particularly welcome. Use address at end of publisher's statement, opposite page.

GROWTH OF SCHOOL-AGE POPULATION

The school-age population in the United States will increase by an estimated 5 million children by the year 2000, according to a recently completed study by the Statistical Bulletin. This projected growth, if realized, will require policymakers to review many educational policies. (See Guest Editorial on page 11.)

In July 1983 there were 48,100,000 children aged 4-17 in the United States or about 2¼ million less than in 1980. However, projections indicate that in the forthcoming years, the school population will grow rapidly. Since the middle 1970s, the annual number of births has been rising steadily and, although there was a slight decline in 1983, the total is not expected to peak until the late 1980s. This is a reflection of the large number of women born during the baby boom years who have had, and are likely to continue having, children. Thus, by the turn of the century, there may be about 53,400,000 youngsters 4-17 years of age, placing a great strain on schools unprepared for the influx and having a concomitant impact on the business community. After the year 2000, the number of children is expected to decline slowly, falling to 50,700,000 by 2050.

> "In forthcoming years, projections indicate that the school population aged 4-17 will grow rapidly."

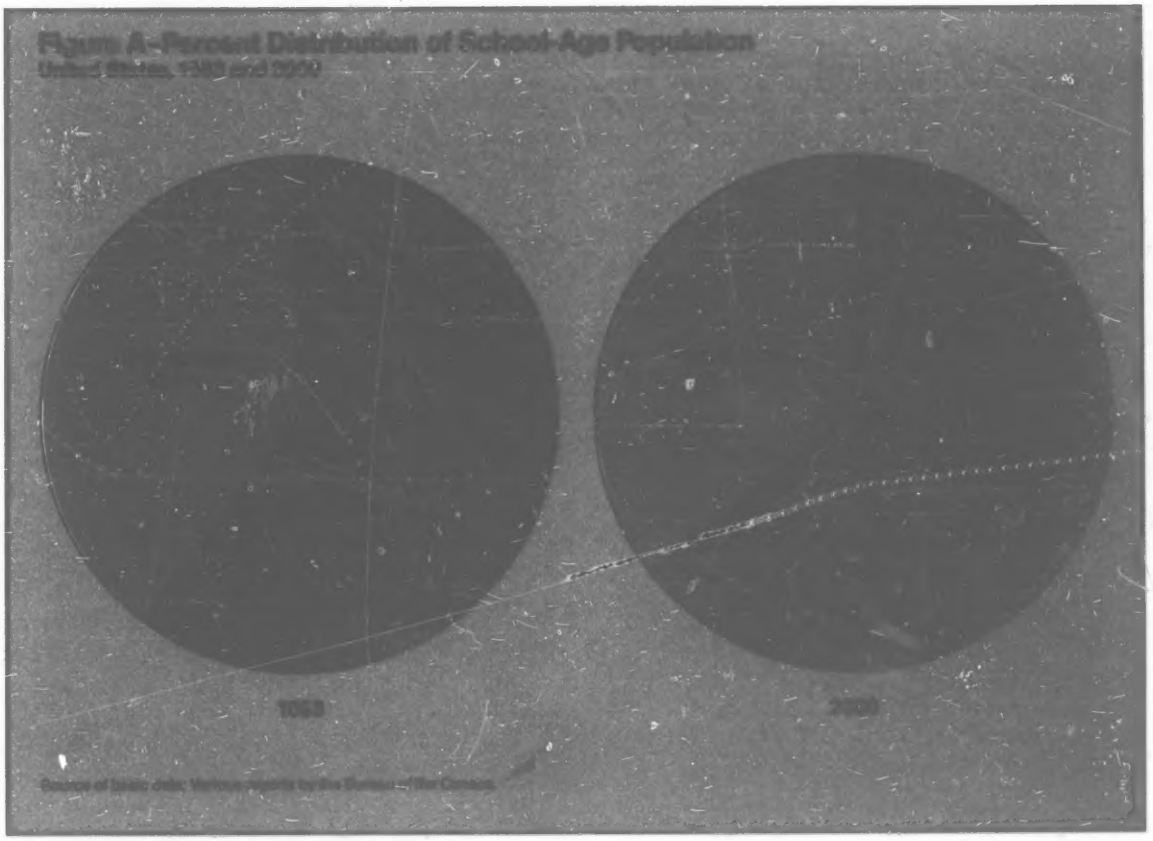
Divergent Trends for Different Age Groups

Several divergent trends exist in the outlook for growth of the school-age population as can be seen in Table 1. In the immediate years ahead, the number of children aged 4-12 will rise significantly. Increases in children 4 and 5 years of age will be the most rapid—their number is expected to rise by 15.5 percent between 1983 and 1990. At the same time, the number of youngsters aged 6-12 is expected to grow from 23,126,000 to 25,090,000 or by 8.4 percent. Yet, the number of teenagers is likely to decline substantially. Between 1983 and 1990 the number of youths 13-17 years of age will fall from 18,377,000 to 16,236,000 or by 11.7 percent.

In the succeeding decade it is projected that there will be vigorous growth in the high school-aged population—their total will increase to 19,290,000 in 2000 or by 18.8 percent. The marked increase in the number of youths 13-17 years of age is a result of the aging of the elementary school population, whose own total is likely to continue to expand by 6.9 percent. Thereafter, the number of children in these school categories will gradually diminish. In contrast, by 2000 the vast majority of women born after World War II will have completed their families so that, not unexpectedly, the number of children aged 4 and 5 will have peaked earlier. Figure A shows how the relative proportions of the school-age population will have changed between 1983 and 2000.

> "In 2050, 16 percent of the U.S. population is expected to be 4-17 years of age."

As may be ascertained from the center tier of Table 1, in 1983 the number of children aged 4-17 constituted 21 percent of the resident population. The projections by the Bureau of the Census reveal that by 1990 the relative proportion of the population at the primary school ages will decline to 20 percent and is likely to remain at this level in 2000. In 2050 just 16 percent of the U.S. population is expected to be 4-17 years of age.



Changes Will Vary by Region: Decline in Northeast, Growth in West

For the country as a whole, between 1980 and 1990, the population aged 5-19 is expected to decrease by 6.8 percent. However, Table 2 shows that there is a substantial disparity in the relative changes at these ages among the four geographic regions of the nation. The decline is likely to be about 2 percent in the South, 12 percent in the North Central region, and 21 percent in the Northeast; on the other hand, in the West the outlook indicates a gain of 8 percent.

Concealed within these figures is the likelihood of an 11.4 percent national increase in the number of children aged 5-9. Moreover, the number of these youngsters in the Northeast will decline by 5.3 percent while those in the West will rise by 34.6 percent. In addition, the number of children 10-14 years of age living in the West will increase by 7.7 percent in comparison to decreases in the other three geographic areas. Apparently then, the impact of the rise in the number of kindergarten and elementary school children will be more significant in some areas of the country than in others. With regard to the number of persons 15-19 years of age, each of the geographic regions of the country is expected to record a significant decline during the current

decade. A graphic presentation of the changing regional patterns is presented in Figure B.

On a state-by-state basis, the projected changes in the number of children and teenagers during the current decade is likely to be most dramatic in Utah and Wyoming. The population aged 5-19 in each of these states will increase by about 50 percent. The other states constituting the

Table 1—School-Age Population

United States, 1970-83 and Projections to 2050

Year, July 1	Age Group			
	All Ages	4-5	6-12	13-17
1970	203,984	7,312	28,740	20,096
1980	227,202	6,303	24,277	19,759
1983	233,981	6,601	23,136	18,377
1990	249,211	7,622	25,090	16,236
2000	267,470	7,240	26,826	19,290
2025	300,502	7,291	26,101	18,644
2050	308,336	7,136	25,337	18,232
1970	100.0	3.6	14.1	9.9
1980	100.0	2.8	10.7	8.7
1983	100.0	2.8	9.9	7.9
1990	100.0	3.1	10.1	6.5
2000	100.0	2.7	10.0	7.2
2025	100.0	2.4	8.7	6.2
2050	100.0	2.3	8.2	5.9
1970-80	11.4	−13.8	−15.5	− 1.7
1983-90	6.5	15.5	8.4	−11.7
1990-2000	7.3	− 5.0	6.9	18.8
2000-2025	12.3	.7	− 2.7	− 3.3
2025-2050	2.6	− 2.1	− 2.9	− 2.2
1983-2000	14.3	9.7	15.9	5.0
1983-2050	31.8	8.1	9.5	− .8

Source of basic data: Various reports by the Bureau of the Census.

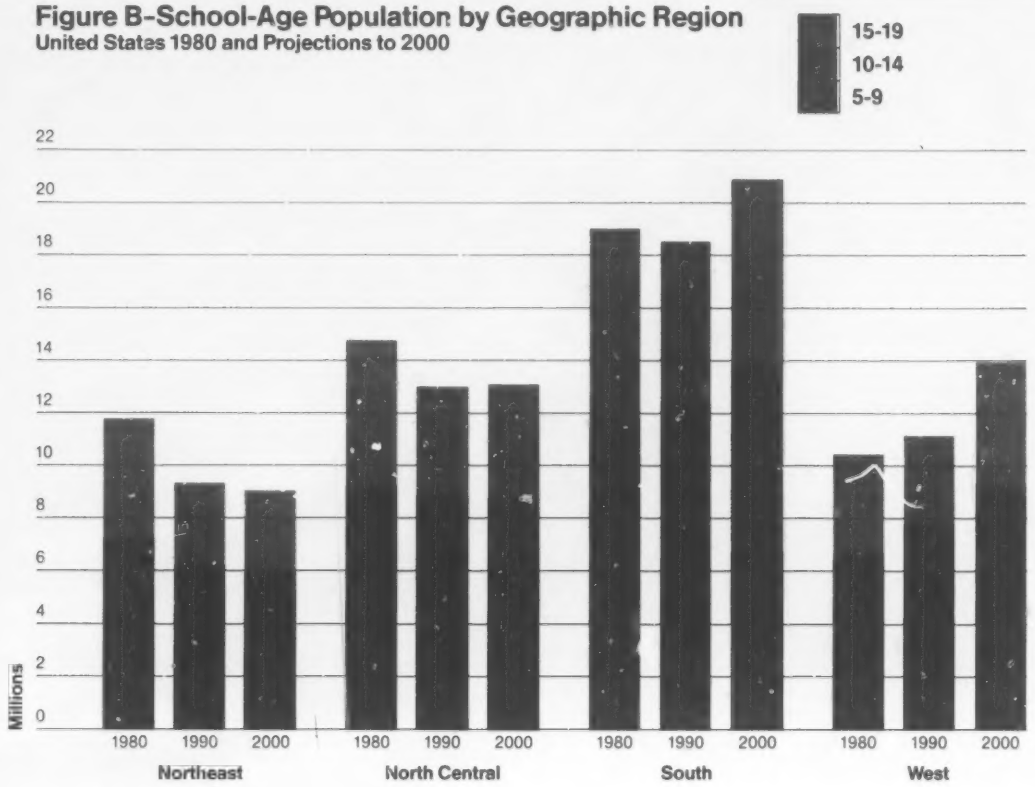
Mountain division will also experience a rise in the number of persons at these ages, although in New Mexico and Montana the increment will be very small. Additionally, with the exception of Hawaii, all of the states in the Pacific division are likely to record a gain in the school-age population, although in California – our most populous state – the increase will be just about 1 percent. Elsewhere in the nation only Texas, Florida and Oklahoma are expected to experience an increase in the number of persons aged 5-19 during the 1980-1990 decade. During this period the largest relative decrease is expected to occur in the District of Columbia – namely 40 percent. Decreases of about half this magnitude may occur in each of the Middle Atlantic states and in Massachusetts, Rhode Island, Connecticut and Maryland.

Table 2—School-Age Population, by Geographic Region
United States, 1980-2000

Age Group	Population (1,000s) April 1980	Population (1,000s) July 1990	Population (1,000s) July 2000	Percent Change 1980-90	Percent Change 1990-2000	Percent Change 1980-2000
United States						
5-19	56,100	52,271	57,165	– 6.8	9.4	1.9
5-9	16,697	18,600	18,758	11.4	.8	12.3
10-14	18,241	16,776	19,519	– 8.0	16.4	7.0
15-19	21,162	16,895	18,888	–20.2	11.8	–10.7
Northeast						
5-19	11,804	9,287	8,995	–21.3	– 3.1	–23.8
5-9	3,331	3,155	2,888	– 5.3	– 8.5	–13.3
10-14	3,950	2,990	3,127	–24.3	4.6	–20.8
15-19	4,523	3,142	2,980	–30.5	– 5.2	–34.1
North Central						
5-19	14,836	13,005	13,165	–12.3	1.2	–11.3
5-9	4,427	4,635	4,302	4.7	– 7.2	– 2.8
10-14	4,803	4,208	4,519	–12.4	7.4	– 5.9
15-19	5,606	4,162	4,344	–25.8	4.4	–22.5
South						
5-19	19,029	18,699	21,052	– 1.7	12.6	10.7
5-9	5,778	6,553	6,886	13.4	5.1	19.2
10-14	6,133	5,967	7,167	– 2.7	20.1	16.9
15-19	7,118	6,179	7,009	–13.2	13.4	– 1.5
West						
5-19	10,431	11,281	13,944	8.1	23.6	33.7
5-9	3,161	4,256	4,682	34.6	10.0	48.1
10-14	3,355	3,612	4,706	7.7	30.3	40.3
15-19	3,915	3,413	4,556	–12.8	33.5	16.4

Source of basic data: Bureau of the Census, Current Population Reports, Series P-25, No. 937.

Figure B-School-Age Population by Geographic Region
United States 1980 and Projections to 2000



Source: Table 2.

In '80s, Greatest Change for Group Aged 5-9

Between 1980 and 1990 the outstanding demographic change that is expected to occur in the outlook for growth of the school-age population is the increase in the number of children aged 5-9. Marked gains are anticipated in the Mountain division—especially in Wyoming, Nevada and Utah. Substantial increases are expected in the remaining states of the division, as well as in the states comprising the Pacific division of the country. In addition, relative increases of at least one-fifth will probably occur in Texas, Florida, Louisiana and Oklahoma. On the other hand, 11 areas of the country may have fewer children aged 5-9 residing within their borders in 1990 than in 1980. The largest decline is expected in the District of Columbia; in the other areas, the relative decreases will be only slightly more than 5 percent in New York, Rhode Island and Massachusetts.

> "The number of youngsters 5-9 years old in the Northeast will decline by 5.3 percent while those in the West will rise by 34.6 percent."

Table 3—Projected Changes in Population Aged 5-19

United States, 1980-2000

Area	Numbers in Thousands 1980				Percent Change 1980-1990				1990-2000			
	5-19	5-9	10-14	15-19	5-19	5-9	10-14	15-19	5-19	5-9	10-14	15-19
UNITED STATES	56,100	16,697	18,241	21,162	−6.8	11.4	−8.0	−20.2	9.4	0.9	16.3	11.8
NEW ENGLAND	3,011	832	1,006	1,173	−20.5	−2.2	−24.9	−29.8	1.7	−4.0	11.6	−1.8
Maine	286	84	94	107	−10.8	1.2	−11.1	−20.0	4.1	1.4	10.0	1.0
New Hampshire	233	68	77	88	−1.7	18.5	−6.6	−13.0	22.5	15.1	35.3	18.3
Vermont	132	38	43	51	−9.9	10.3	−13.1	−22.2	10.9	2.6	20.8	10.3
Massachusetts	1,384	375	461	548	−24.7	−6.0	−29.6	−33.3	−2.4	−8.2	7.9	−5.9
Rhode Island	226	62	74	90	−23.5	−7.0	−27.6	−31.4	−2.2	−7.2	8.6	−7.0
Connecticut	751	206	256	288	−23.4	−4.5	−28.2	−32.8	−1.2	−7.1	8.5	−4.3
MIDDLE ATLANTIC	8,793	2,499	2,944	3,350	−21.6	−6.3	−24.1	−30.8	−4.8	−10.0	2.2	−6.3
New York	4,189	1,185	1,406	1,598	−23.7	−8.6	−26.2	−32.7	−7.3	−12.2	−.6	−8.8
New Jersey	1,785	509	606	671	−20.0	−3.9	−23.3	−29.3	−.4	−5.3	8.4	−3.9
Pennsylvania	2,818	805	932	1,081	−19.4	−4.4	−21.5	−28.9	−4.2	−10.0	2.3	−4.5
EAST NORTH CENTRAL	10,599	3,175	3,454	3,970	−14.0	1.3	−14.8	−25.5	−.2	−7.5	6.4	1.1
Ohio	2,716	822	887	1,008	−15.9	−3.3	−16.6	−25.5	−3.6	−9.9	3.1	−3.5
Indiana	1,418	433	455	530	−11.9	−.5	−11.1	−22.0	−.2	−5.4	5.9	−.7
Illinois	2,834	849	918	1,066	−13.2	5.3	−14.3	−27.0	.8	−8.3	7.3	4.8
Michigan	2,429	727	802	900	−15.9	−2.8	−17.6	−25.1	−1.8	−7.5	5.5	−2.9
Wisconsin	1,204	345	392	467	−10.1	13.2	−10.3	−27.1	7.3	−3.0	13.6	12.7
WEST NORTH CENTRAL	4,237	1,252	1,349	1,636	−8.2	13.3	−6.3	−26.3	4.7	−6.5	9.8	12.5
Minnesota	1,030	296	334	400	−9.6	16.7	−9.6	−29.0	7.9	−4.8	14.9	16.0
Iowa	720	211	232	278	−9.2	13.0	−7.4	−27.5	3.7	−7.0	7.6	12.3
Missouri	1,199	356	382	461	−10.3	7.6	−8.9	−25.2	2.7	−6.9	8.9	7.1
North Dakota	164	49	51	64	−4.6	16.9	2.0	−26.4	2.6	−8.4	3.8	15.3
South Dakota	176	53	54	69	−5.9	18.0	−.7	−28.3	3.6	−9.6	7.0	16.5
Nebraska	386	118	121	147	−5.2	13.4	−1.3	−23.3	4.6	−6.3	9.5	12.4
Kansas	562	169	175	218	−4.0	17.4	−.2	−23.7	5.1	−6.9	8.2	16.1

SOUTH ATLANTIC	9,046	2,681	2,939	3,426	−6.3	7.8	−8.3	−15.5	10.7	4.7	19.5	8.5
Delaware	151	42	49	60	−16.6	5.7	−18.6	−30.8	3.7	−5.8	12.8	5.3
Maryland	1,054	293	357	405	−18.8	3.7	−23.8	−30.8	3.1	−5.5	12.3	3.5
District of Columbia	136	37	42	58	−40.3	−24.1	−46.3	−46.3	−22.4	−28.5	−13.7	−23.3
Virginia	1,324	388	431	506	−10.4	4.3	−12.6	−19.7	4.9	−.9	12.2	4.0
West Virginia	485	153	158	174	−6.0	.1	−3.7	−13.4	−1.4	−4.1	.1	−.1
North Carolina	1,495	447	482	566	−11.4	−4.9	−12.7	−15.4	−.3	−1.3	5.8	−4.7
South Carolina	836	254	266	317	−5.8	4.8	−6.6	−13.6	5.3	1.4	10.2	4.5
Georgia	1,447	447	470	531	−5.8	6.0	−8.9	−13.0	7.7	1.8	16.3	5.8
Florida	2,117	621	685	811	8.6	27.4	7.2	−4.6	30.5	21.1	44.3	26.9
EAST SOUTH CENTRAL	3,818	1,172	1,226	1,420	−5.1	5.9	−4.6	−14.6	5.4	.3	10.7	5.6
Kentucky	946	289	302	354	−3.0	7.0	−.0	−13.7	6.3	2.7	9.7	6.6
Tennessee	1,150	350	370	430	−5.8	5.0	−6.1	−14.3	5.4	.8	10.9	4.8
Alabama	1,018	314	328	376	−6.8	4.5	−7.3	−15.8	3.8	−1.9	9.4	4.3
Mississippi	704	219	226	259	−4.1	8.1	−4.2	−14.4	6.5	−.8	13.5	7.6
WEST SOUTH CENTRAL	6,165	1,926	1,968	2,272	7.0	25.8	6.9	−8.9	19.1	8.0	26.0	24.9
Arkansas	580	180	186	214	−1.4	7.8	2.0	−12.1	7.0	3.2	10.4	7.4
Louisiana	1,144	346	372	426	−.9	22.4	−2.4	−18.5	12.4	.9	17.5	21.3
Oklahoma	739	230	231	279	6.5	22.2	10.9	−10.0	15.3	5.2	20.6	21.2
Texas	3,702	1,170	1,180	1,352	10.8	30.3	9.7	−5.2	23.3	11.0	31.8	29.2
MOUNTAIN	2,910	917	926	1,067	21.2	42.8	25.5	−1.1	33.1	21.3	38.7	41.7
Montana	197	60	63	75	.7	19.4	7.8	−20.5	8.8	−1.0	10.8	18.2
Idaho	250	83	79	88	28.3	44.0	37.2	5.3	27.6	18.0	26.0	42.0
Wyoming	119	39	37	43	47.7	82.2	53.0	11.4	53.3	30.7	60.1	79.0
Colorado	708	213	226	269	10.4	31.8	12.9	−8.7	25.2	14.2	32.3	30.4
New Mexico	355	109	114	132	1.7	24.2	4.2	−19.0	14.9	4.1	20.2	22.8
Arizona	683	211	220	252	22.1	42.0	23.7	3.9	40.0	29.5	51.0	40.7
Utah	411	146	126	139	50.8	63.7	66.9	22.6	40.1	27.3	38.3	60.3
Nevada	187	56	62	70	26.1	64.5	19.3	1.7	57.6	39.8	75.0	62.4
PACIFIC	7,522	2,244	2,429	2,849	3.1	31.3	.9	−17.2	19.3	5.0	26.3	29.8
Washington	987	296	322	369	6.7	34.4	4.9	−14.0	22.1	6.2	31.0	32.7
Oregon	618	189	203	226	14.8	37.7	17.1	−6.6	24.6	11.5	28.3	36.7
California	5,577	1,650	1,796	2,130	1.2	30.4	−1.6	−19.0	18.1	3.6	25.3	28.9
Alaska	106	35	34	37	11.1	41.0	7.3	−13.5	27.2	17.3	33.8	35.0
Hawaii	235	73	75	87	−2.3	17.8	−4.8	−17.1	13.0	7.0	18.2	14.9

Note—Figures have been independently rounded; hence, totals may not equal the sum of the parts.

Source of basic data: Bureau of the Census, Current Population Reports, Series P-25, No. 937.

As mentioned earlier, three of the four geographic regions of the nation are anticipated to contain fewer children aged 10-14 in 1990—

> "Between 1980 and 1990, the outstanding demographic change is the expected growth in the number of children aged 5-9."

the West being the exception. Further analysis reveals that even within this region sharp percentage differences will also occur. For instance, as a group, the Pacific states will only record a 0.9 percent increase, whereas the relative gain in the Mountain states will be 25.5 percent. Moreover, in California and Hawaii, small decreases are expected in comparison to marked gains in Utah, Wyoming and Idaho.

Regarding the population aged 15-19, only five states are expected to show any gain. Moreover, they are all contained within the Mountain division of the country. Utah is expected to record a gain of 22.6 percent and Wyoming an increase of 11.4 percent. Lesser increases will occur in Idaho, Arizona and Nevada.

Table 3 shows the details of the changes of the school-age population by state for the decades of the 1980s and 1990s. It is extremely important to note that the preceding analysis is based on population projections with the underlying migration assumption that the 1970-1980 rates of net migration by age for each state continue unchanged. Thus, whereas the projection for the nation as a whole will most likely be unaffected, continued usage of past state migration trends may not be realistic for state purposes—some recent data for the early 1980s indicate different migration shifts. However, the study intends to provide guidelines for future planning and, as long as the figures are used with caution, they should be very helpful.

Survey Reveals Concerns/Attitudes of Teachers

The educational concerns of teachers were learned from a recent survey of 1,981 elementary and secondary public school teachers conducted by Louis Harris and Associates and sponsored by Metropolitan Life Insurance Company.

Primary objectives of the survey were to discover how teachers define the seriousness of problems described by various commissions and reports; their willingness to accept and implement reforms; how they assess their own schools and jobs; their willingness to accept new standards and methods of accountability; how they assess the role of the federal government.

Results show that teachers want to be at the forefront of change in the public school system and are willing to make sacrifices to help achieve major reforms. Teachers love to teach, even though they feel underpaid and burdened with excessive administrative work. Generally they feel a lack of parental and community support, and the lack of government funding. A majority of teachers are in favor of stricter standards for students as well as for themselves. They favor periodic retesting of themselves and are willing to submit to criticism by their peers and administrators to improve the system.

Specifically, this study shows that teachers...

- favor higher graduation requirements
- support student minimum competency tests
- support career ladders, allowing teachers to assume greater responsibility for more pay
- favor comprehensive tests for future teachers
- see positive effects from emphasis on the basics of reading, writing and math
- want to broaden the curriculum to include computer literacy and foreign languages
- believe teachers' views have not been adequately heard in the current debate on education.

For both marketing planning, teachers want to improve public education. They are overwhelmingly receptive to measures that would upgrade the quality of those attracted to the teaching profession.

For a complete report of the American Teacher Survey, write to the Editor.

Guest Editorial

Why Health Education Must Be in Our Nation's Educational Policy

When health care costs in our country exceed 10 percent of the gross national product, it is time for policymakers to seriously consider the value of health promotion and health education initiatives aimed at the prevention of health problems.

A Balanced Approach to Health Policy

In developing health policy, I believe that we need a balanced approach from four major perspectives if our goal is a healthy society and if we wish to have the reputation of a nation with the most skilled, competent and sturdy workforce. Thus, we must address the issue of health when we construct our *environmental policy*. Our efforts to keep our air and water pure, our food unadulterated and our parks and forests green and available to all people is the first dimension of a balanced health policy for our nation.

The second area in which public policy can make a difference in health is in the *workplace environment*. We must continue to be vigilant about keeping the places in which men and women spend their working time safe and as free as possible from health hazards.

The third area of national concern is the whole realm of medical insurance and the *regulation of the health care delivery system*. There is much we can do to try to achieve a health care system that emphasizes health promotion, wellness and prevention more than surgeries and drugs to repair the damage of poor health habits.

> "With more than 48 million children and youth in the United States attending our schools, health education is surely the greatest opportunity we have to make a difference in the positive health habits of our citizenry."

These three areas—environmental protection, workplace safety and health and the regulation of the health care system—are important parts of a balanced national approach to health policy. The fourth area, which I believe is the most important, is *health education and health promotion in our schools*. Our school system is, in my opinion, one of the best institutions available in our society for meaningful health promotion and health education programs.

School Health Education—A Great Opportunity

With more than 48 million children and youth in the United States attending our schools, this is surely the greatest opportunity we have to make a difference in the positive health habits of our citizenry.

I realize that school health education is no panacea because there are no easy solutions to the many complex health problems confronting our society. However, the schools, through a well-planned health promotion and health education program, will provide students with relevant learning activities that can assist them in making wise health decisions immediately, and later on as adults.

The most critical component of a quality program in our schools is teachers who are interested, prepared and motivated to teach in the area of health education.

With the visible support of school boards and administrators, and in cooperation with health care providers as well as community agencies, our schools can become the centers for health promotion and health education in the 1990s.

Anthony S. Earl
Governor of Wisconsin

DRUG THERAPY IN OFFICE VISITS TO PHYSICIANS

Current concern with the physical and mental consequences of the *abuse* of drugs tends to obscure the benefits derived from their *proper* use. Drugs ordered or administered by physicians can be invaluable in the prevention, diagnosis and treatment of diseases, and have had significant influence on the reduction of morbidity and mortality over the years (e.g., hypertension and stroke). Medications may be given for the acute treatment or chronic management of diseases, for reducing painful and debilitating symptoms, or for retarding the progress of disease. The total complexity of medication therapy is illustrated in its estimated 1981 cost to the United States ($21 billion). While the end benefit of medication therapy is to improve the patient's life style, it must be also viewed in a national context.

Information on drug therapy used in visits to office-based physicians—while not measuring *overall* medication use in the nation—is useful in (1) assisting in the clarification and evaluation of public policy issues in pharmaceutical care,

"In 1980 medication therapy was used in nearly three-fourths of all visits to office-based physicians."

(2) assuring private insurance programs, hospitals, health maintenance organizations, etc., that patients have adequate access to comprehensive pharmaceutical care, and (3) planning public and private health services programs.

Medication therapy was used in an estimated 363.5 million visits to office-based physicians* in the United States in 1980—that is, in almost two-thirds of the total 575.7 million office visits made that year. In analyzing these visits, drugs were mentioned as part of the therapy about 679.6 million times yielding an overall "drug mention" rate of 1.18 drugs per office visit. An average of 1.87 drugs was used per drug visit—the drug intensity rate. Rates were higher than average for patients aged 45 and older, and varied greatly by diagnosis. The following report presents an in-depth analysis of data collected by the 1980 National Ambulatory Medical Care Survey.

Information on medication therapy associated with 18 principal (first listed) diagnoses is given in Table 1. These diagnoses—based on the International Classification of Diseases, Ninth Revision, Clinical Modification—were selected because they were most commonly rendered during office visits in 1980. Of the 18 diagnoses, 15 are illness-related and three are preventive care health services (health supervision of infant or child, normal pregnancy, and general medical examination). For each diagnosis, the table gives the number of office visits, the number and proportion of visits when one or more drugs were ordered or provided, the number of drug mentions, the drug mention rate and the drug intensity rate.

Proportion of Office Visits Utilizing Medication

Medication therapy was used in 63.1 percent of all office visits in 1980. As shown in Table 1, proportions varied widely by diagnosis, from a low of 29 percent for general medical examination to a high of 94 percent for acute or chronic bronchitis and for acute upper respiratory infections. Visits for preventive care services were less likely to be associated with drug therapy than were illness-related visits. Of the illness-related diagnoses, proportions of office visits utilizing drugs were lowest for neurotic or depressive disorders NEC† (52.4 percent) and for the two musculoskeletal conditions: sprains and strains of sacroiliac or other regions of the back (59.7) and intervertebral disc disorders or other disorders of the back (61.2).

*Excludes physicians in Alaska and Hawaii and those in the specialties of anesthesiology, pathology or radiology.
†Not elsewhere classified.

Table 1—Office Visits, Drug Visits, Drug Mentions, Drug Mention Rates and Drug Intensity Rates, by Selected Principal Diagnoses
United States, 1980

	Office Visits			Drug Mentions		
	All Visits	Drug Visits			Drug Mention Rate[2]	Drug Intensity Rate[3]
	Number in Thousands	Number in Thousands	Percent	Number in Thousands	Rate per Visit	
All diagnoses	575,745	363,489	63.1	679,593	1.18	1.87
Diabetes mellitus	9,551	7,592	79.5	17,496	1.83	2.30
Obesity and other hyperalimentation	8,081	6,589	81.5	15,070	1.86	2.29
Neurotic disorders or depressive disorders, NEC[4]	13,652	7,158	52.4	11,951	.88	1.67
Suppurative and unspecified otitis media	11,748	10,067	85.7	18,168	1.55	1.80
Essential hypertension	25,137	22,262	88.6	46,484	1.85	2.09
Ischemic heart disease	10,430	9,043	86.7	26,523	2.54	2.93
Acute upper respiratory infections of multiple or unspecified sites (acute URI)	16,969	15,977	94.2	32,311	1.90	2.02
Acute pharyngitis or acute laryngitis and tracheitis	10,277	9,020	87.8	16,139	1.57	1.79
Allergic rhinitis	8,439	7,621	90.3	10,479	1.24	1.38
Bronchitis, acute; or not specified as acute or chronic	8,323	7,855	94.4	16,349	1.96	2.08
Asthma	5,921	5,477	92.5	11,655	1.97	2.13
Diseases of sebaceous glands	10,578	8,946	84.6	20,981	1.98	2.35
Osteoarthritis and allied disorders or other and unspecified arthropathies	8,297	6,799	82.0	14,251	1.72	2.10
Intervertebral disc disorders or other and unspecified disorders of back	6,071	3,716	61.2	7,138	1.18	1.92
Sprains and strains of sacroiliac region or other and unspecified parts of back	7,393	4,411	59.7	6,586	.89	1.49
Health supervision of infant or child	17,496	10,341	59.1	16,502	.94	1.60
Normal pregnancy	26,256	8,727	33.2	10,755	.41	1.23
General medical examination	16,078	4,732	29.4	6,624	.41	1.40

[1]Based on the *International Classification of Diseases, 9th Revision, Clinical Modification.*
[2]Drug mentions divided by number of visits.
[3]Drug mentions divided by number of drug visits.
[4]NEC = not elsewhere classified.
Source: National Ambulatory Medical Care Survey, National Center for Health Statistics.

Drug Mention Rates

Drug mention rates—representing the average number of drugs (1.18 in 1980) utilized per office visit—are affected by the number of office visits in which no drugs were utilized. Rates ranged from a low of 0.41 for general medical examination and for normal pregnancy to a high of 2.54 for ischemic heart disease. The lowest rates among illness-related diagnoses were 0.88 for neurotic or depressive disorders NEC and 0.89 for sprains and strains of the sacroiliac or other regions of the back.

Table 2—Percent Distribution of Drug Visits by Number of Medications, According to Selected Diagnoses
United States, 1980

	Number in Thousands	Percent Distribution					
All diagnoses	363,489	100.0	48.9	28.8	12.6	6.5	2.9
Diabetes mellitus	7,592	100.0	39.1	27.0	13.2	11.6	9.1
Obesity and other hyperalimentation	6,589	100.0	35.9	20.4	25.4	16.3	2.1
Neurotic disorders or depressive disorders, NEC[2]	7,158	100.0	54.9	29.7	10.7	3.4	1.5
Suppurative and unspecified otitis media	10,067	100.0	43.4	39.1	12.4	4.2	.9
Essential hypertension	22,282	100.0	40.0	30.9	16.0	9.1	3.8
Ischemic heart disease	9,043	100.0	16.7	27.0	23.1	21.1	12.1
Acute upper respiratory infections of multiple or unspecified sites (acute URI)	15,977	100.0	36.9	38.2	16.7	7.0	2.1
Acute pharyngitis or acute laryngitis and tracheitis	9,020	100.0	46.8	35.4	10.5	6.7	.6
Allergic rhinitis	7,621	100.0	76.3	14.3	7.0	1.4	1.0
Bronchitis, acute; or not specified as acute or chronic	7,855	100.0	26.3	52.7	13.4	4.8	3.0
Asthma	5,477	100.0	42.6	23.8	18.8	10.4	4.3
Diseases of sebaceous glands	8,946	100.0	18.6	44.2	21.4	15.6	.2
Osteoarthritis and allied disorders or other and unspecified arthropathies	6,799	100.0	44.9	23.7	16.2	10.7	4.6
Intervertebral disc disorders or other and unspecified disorders of back	3,716	100.0	43.0	34.5	13.4	6.2	2.8
Sprains and strains of sacroiliac region or other and unspecified parts of back	4,411	100.0	62.7	26.6	9.4	1.3	.0
Health supervision of infant or child	10,341	100.0	52.8	36.2	10.2	.3	.5
Normal pregnancy	8,727	100.0	79.1	19.0	1.8	.3	.0
General medical examination	4,732	100.0	71.0	21.1	6.1	1.4	.3

[1]Based on the *International Classification of Diseases, 9th Revision, Clinical Modification.*
[2]NEC = not elsewhere classified.
Source of basic data: National Ambulatory Medical Care Survey, National Center for Health Statistics.

Drug Intensity Rates

Drug intensity rates—representing the average number of drugs (1.87 in 1980) utilized per drug visit—ignore nondrug visits and focus on the amount of drug therapy given. Drug intensity rates for individual diagnoses, however, varied differently from corresponding drug mention rates. Ischemic heart disease, the nation's No. 1 cause of death, had the highest drug intensity rate (2.93) as well as the highest drug mention rate; but diabetes mellitus, which ranked eighth in drug mention rates, had the third highest drug intensity rate (2.30). At the other end of the scale,

allergic rhinitis, an ubiquitous affliction, used fewer drugs ("intensity") per drug visit (1.38) than neurotic or depressive disorders NEC (1.67), although the latter had the lowest illness-related drug mention rate. Variations in drug mention rates and drug intensity rates among the 18 principal diagnoses are illustrated in Figure A.

Number of Medications

Table 2 shows the proportions of drug visits by number of medications for each listed diagnosis in 1980. One medication per visit was most frequently ordered or provided for the majority of the diagnoses. Diagnoses in which there was a strong tendency toward the use of a single medication included:

- normal pregnancy (79 percent)
- allergic rhinitis (76 percent)
- general medical examination (71 percent)
- sprains and strains of sacroiliac or other regions of the back (63 percent)
- neurotic or depressive disorders NEC (55 percent)
- health supervision of infant or child (53 percent)

Two medications per visit were most likely to be utilized in the following diagnoses:

- bronchitis, acute or chronic (53 percent)
- diseases of sebaceous glands (44 percent)
- acute upper respiratory infections (38 percent)
- ischemic heart disease (27 percent)

However, more than half of the drug visits for ischemic heart disease (56 percent) utilized three or more medications per visit. Other diagnoses with a relatively high proportion of three or more drugs were:

- obesity and other hyperalimentation (44 percent)
- diseases of sebaceous glands (37 percent)
- diabetes mellitus (34 percent)
- asthma (34 percent)
- osteoarthritis and allied disorders (32 percent)
- essential hypertension (29 percent)

Patient Characteristics

The number of drug visits and mentions among female patients in 1980 substantially outnumbered drug visits and mentions among male patients in the ratio of 3 to 2, closely paralleling the sex ratio for office visits in general. As a result, there was no significant sex differential in the proportion of office visits that utilized drugs (63.3 vs 62.8, respectively), nor was there a significant difference between female and male drug mention rates (1.19 vs 1.16, respectively) or drug intensity rates (1.89 vs 1.84). As illustrated in Figure B, both drug-mention and drug-intensity rates steadily rose after age 14, reaching the highest point in the age group 65 and over. High rates in this age group reflect the onset of chronic and debilitating diseases that afflict the aging. They also reflect the presence of concurrent illnesses in the elderly, requiring

"Nearly half of all prescriptions filled are taken incorrectly."

drugs in *addition* to what was prescribed for the principal diagnosis listed. Figure B also shows that male and female rates were similar until age 65, when rates for female patients significantly exceeded those for males.

Drug mention rates increased with advancing age for many of the individual diagnoses. These rates peaked at ages 45-64 for some of the respiratory diseases: acute upper respiratory infections, asthma, and allergic rhinitis. On the other hand, drug mention rates for diseases of sebaceous glands decreased with advancing age, reflecting the type of condition. Young patients usually have acne, which is treatable by medication; older patients are more likely to have sebaceous cysts, which usually require surgery but not necessarily drugs.

Drug Status Characteristics

Figure C characterizes the 1980 drug mentions according to four key dimensions: brand/generic name status, prescription status, composition status, and federal control status.

The merits of prescribing drugs by brand name versus the less costly generic name has been the subject of extreme interest and discussion in recent years. On the average, 7 out of 10 drug mentions by office-based physicians in 1980 were identified by brand name (manufacturer's product name). The following diagnoses had the highest proportions of generic drugs:

- health supervision of infant or child (75 percent)
- general medical examination (45 percent)
- obesity and other hyperalimentation (35 percent)
- acute pharyngitis or laryngitis (34 percent)
- diabetes mellitus (33 percent)

The high proportions in the first two diagnoses reflect the large number of immunizations given during office visits.

Over-the-counter drug mentions represent those situations in which physicians permit self-care by the patient. These drugs do not require a prescription and are thereby less expensive for the patient than prescription drugs. Eighty-three percent of all drug mentions in 1980, on the average, were prescription drugs, and 13 percent were over-the-counter drugs. Diagnoses with very high proportions of over-the-counter drugs were:

- normal pregnancy (49 percent)—due to vitamin mentions
- diabetes mellitus (25 percent)—due to utilization of insulin
- acute upper respiratory infections (17 percent) and acute pharyngitis or laryngitis (15 percent)—due to the availability of numerous over-the-counter antihistamines, decongestants, expectorants and cough suppressants.

Composition status describes the drug according to whether it is a single ingredient drug or a combination drug (including multivitamins). The use of combination drugs offers the patient more convenience, but usually costs more and permits less flexibility in dosage adjustment. Physicians trained since the early 1950s have used single ingredient drugs. Accordingly, for all diagnoses combined, about 70 percent of all drug mentions in 1980 were single ingredient drugs. Particularly high proportions of combination drugs were prescribed in:

- normal pregnancy—due to the large proportions of multivitamins
- health supervision of infant or child—due to the large proportions of combined vaccines
- otitis media

Federal control status comprises drugs with significant potential for addiction or habituation. Such medications are under the regulatory control of the Drug Enforcement Administration (DEA) which assigns such drugs to one of five categories. These categories classify drugs by potential for abuse—ranging from high (Schedule I) to low (Schedule V), and by potential for psychological or physical dependency—ranging from severe (I) to limited (V). About 9 percent of all drug mentions in 1980 were controlled drugs, with the highest frequency of mentions in Schedule IV. The following diagnoses had high proportions of controlled drugs prescribed:

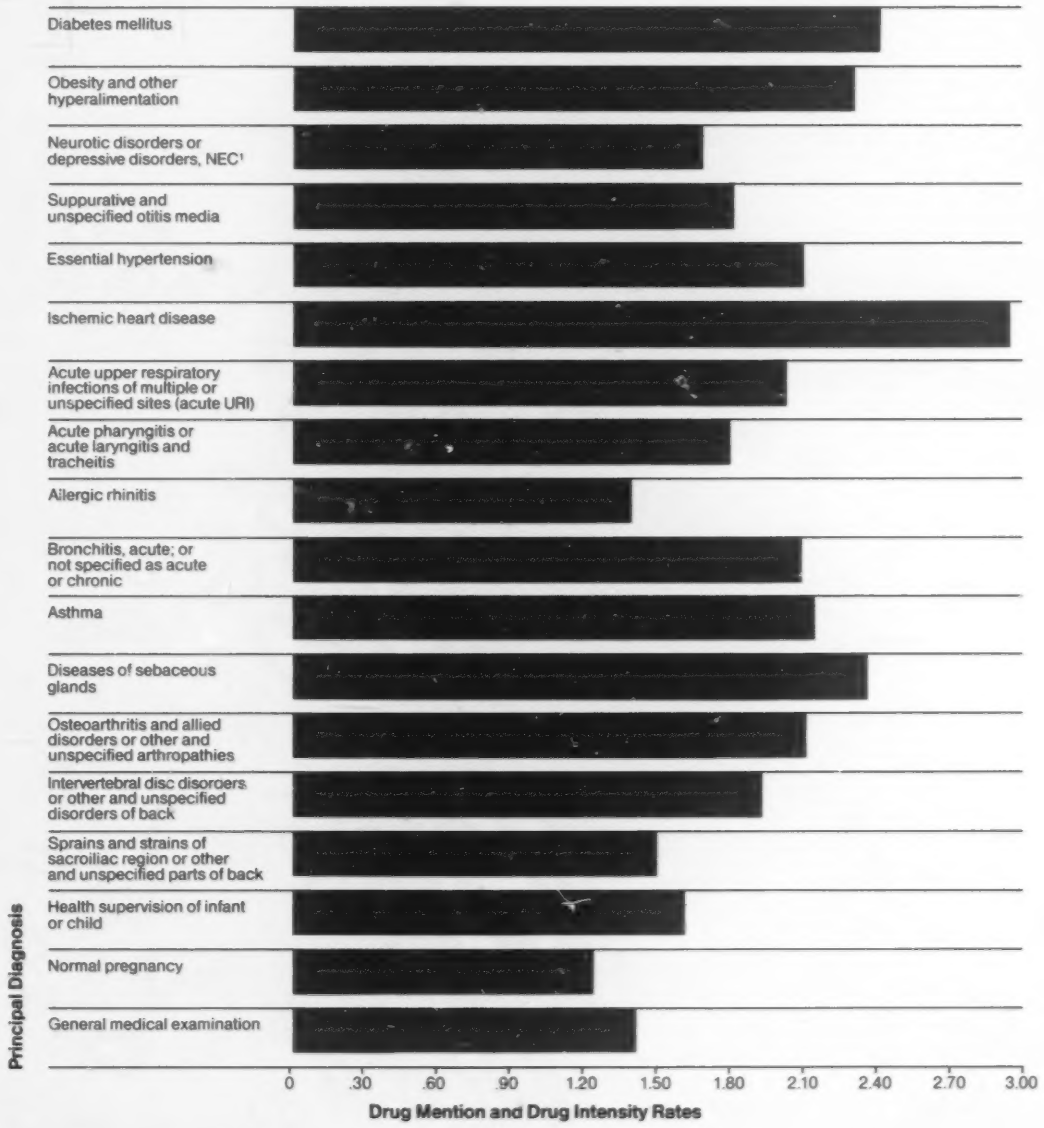
- neurotic or depressive disorders, not elsewhere classified (33 percent)
- obesity and other hyperalimentation (32 percent)
- the two musculoskeletal conditions (about 25 percent each)

Implementation of Proper Drug Use

Ultimate utilization of a drug depends on patient compliance with the physician's instructions. Nearly half of all prescriptions filled are estimated taken incorrectly, so that patients are probably obtaining suboptimum effects from their medications—or they may suffer avoidable side effects, prolonged illness, or even increased hospitalization.

There are also gaps in patient-health professional communication that further complicate medication therapy. On the one hand, patients may not know the appropriate questions to ask, while on the other hand, physicians, nurses and pharmacists may not always allow adequate time to respond to patients' drug information

Figure A–Drug Mention Rates and Drug Intensity Rates for Selected Diagnoses
United States, 1980



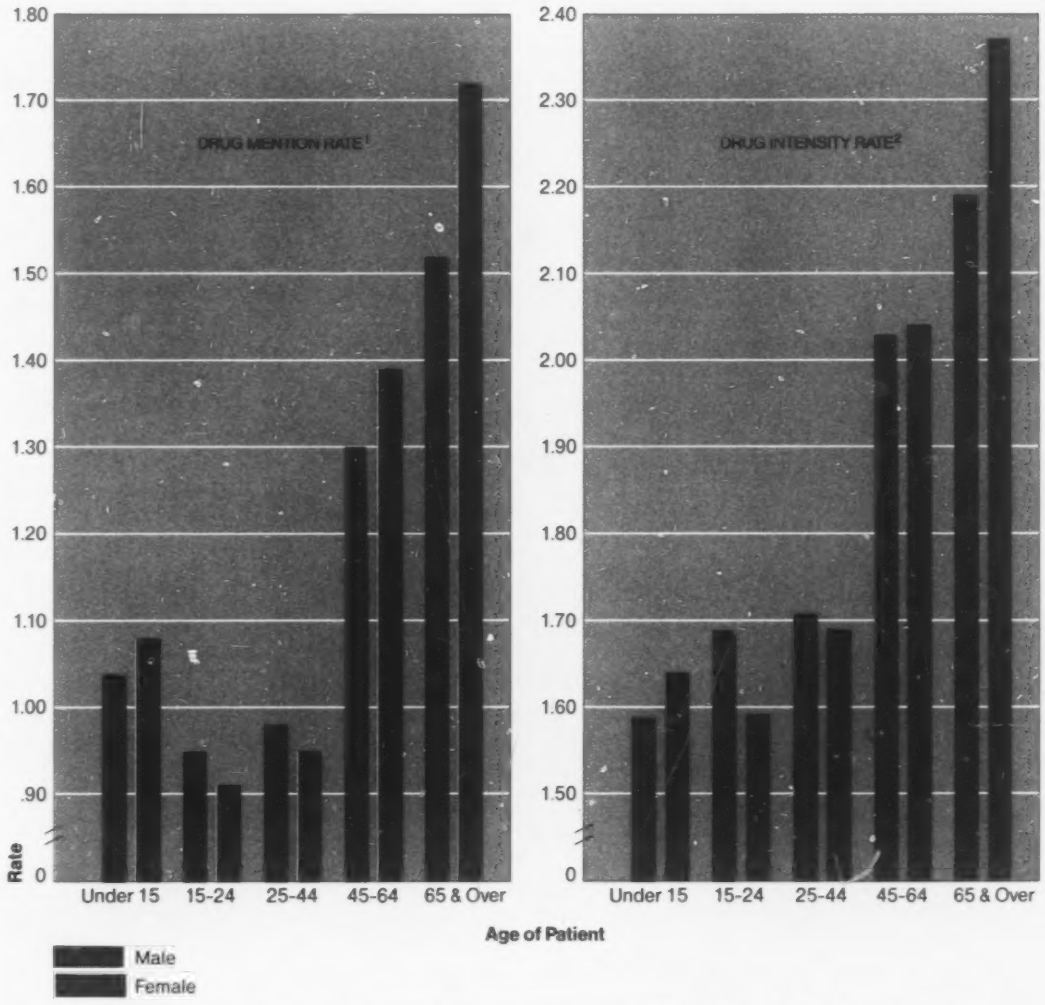
Drug Mention Rate: Average number of drugs ordered or provided per office visit.

Drug Intensity Rate: Average number of drugs ordered or provided per drug visit.

[1]NEC=Not elsewhere classified.

Source of basic data: National Ambulatory Medical Care Survey, National Center for Health Statistics.

Figure B–Drug Mention Rates and Drug Intensity Rates by Age and Sex of Patient
United States, 1980



[1]Average number of drugs ordered or provided per office visit.
[2]Average number of drugs ordered or provided per drug visit.

Source of basic data: National Ambulatory Medical Care Survey, Nation Center for Health Statistics.

needs. To promote more informed medication taking, the Federal Drug Administration (FDA) has been actively cooperating with the National Council on Patient Information and Education (NCPIE), a privately funded organization representing health professional societies, consumer groups, pharmaceutical manufacturers and voluntary health groups. The NCPIE is carrying on a nationwide education program to encourage both health professionals and patients to improve communications on proper drug usage.

The NCPIE recommends that patients ask the following five basic questions about their prescriptions:

1 *What is the name of the drug and what is it supposed to do?*

2 *How and when do I take it—and for how long?*

3 *What foods, drinks, other medications or activities should I avoid while taking this drug?*

4 *Are there any side effects, and what should I do if they occur?*

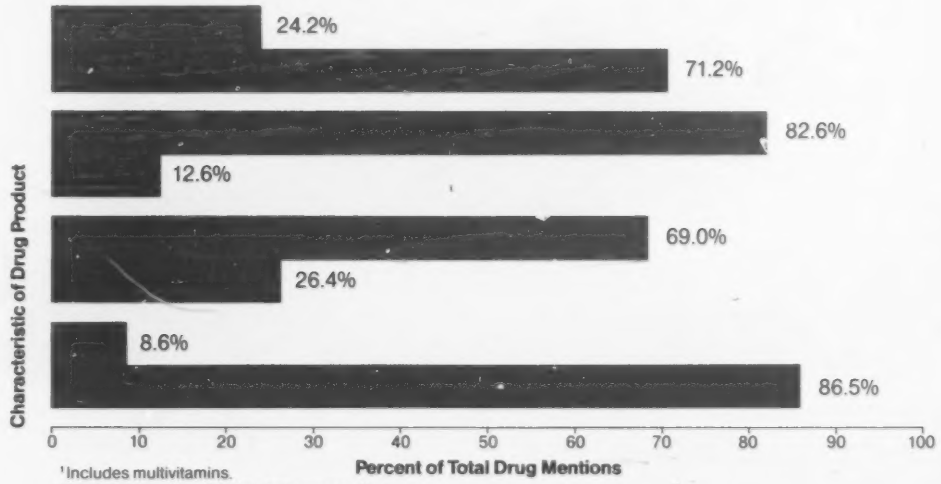
5 *Is there any written information about this drug?*

It is important that patients assume an active role as partners with health professionals for successful medication therapy.

Resources for patient information on the safe use of prescription drugs:

- **National Council on Patient Information and Education**
  1625 I Street N.W.
  Washington, D.C. 20006
- **National Pharmaceutical Council, Inc.**
  1030 15th Street, N.W.
  Washington, D.C. 20005
  (Free booklet "Understanding Your Prescription.")

Figure C–Percent Distribution of Drug Mentions, by Characteristics of Drug Product
United States, 1980



[1] Includes multivitamins.
[2] Drug Enforcement Administration controlled.

Note: Percentages do not add up to 100 because the status for some drugs is unknown.
Source of basic data: National Ambulatory Medical Care Survey, National Center for Health Statistics.

CAPSULE BRIEFS

are timely literature selections with broad reader interest.

A Cancer Is Creeping in Canada

An increase in smoking by Canadian women prompts this shocking quote about achieving gender equality: "Because lung cancer mortality rates among males are gradually slowing . . . rates for females may equal those for males by [the year] 2000." (Y. Mao, H. Smith, *Chronic Diseases in Canada* 4:32-34, 1983)

Town-Gown Medical Care Quality Differences: Nil

Survival rates were the same (17 percent), nine months after hospitalization in 51 carefully matched pairs of seriously ill patients who differed only in whether they were cared for by faculty or community physicians at Stanford University Medical Center. The cost of medical care in hospitals was an estimated 11 percent higher (adjusted) for faculty physicians' patients. While not definitive, the study poses important questions for all persons concerned about higher reimbursement costs for teaching hospital confinements. (A.M. Garber, V.R. Fuchs, J.F. Silverman, *New England Journal of Medicine* 310:19:1231-1237, 1984)

The Ultimate Epidemic: Nuclear Winter

A catastrophic view of the aftermath of a nuclear war was provided in two articles by a multidisciplinary research team of more than 20 scientists. Using computer simulation, they examined the biological effects of massive dust and soot quantities injected into the air estimated to absorb enough sunlight to cause widespread cold and darkness. Their assumptions were carefully described. Most seem moderate; e.g., only 30 percent of the world's total nuclear megatonnage would be used. Postwar survivors (30-50 percent of the total world population) would face starvation, freezing conditions in darkness, and near lethal doses of radiation. The authors (Ehrlich *et al*) conclude, "The population size of *homo sapiens* could be reduced to prehistoric levels or below, and extinction of the human species itself, cannot be excluded." Though not without technical controversy, the two studies offer an intensely sobering analysis for all to consider. (P.R. Ehrlich, *et al*, *Science* 222:1293-1300, R.P. Turco, *et al*, *Science* 222:1283-1292, 23 December 1983)

Wrong, Wrong, Wrong...

Much of what we think we know about poverty and welfare is turning out to be wrong, according to research scientists at the Institute for Social Research, University of Michigan. Whereas 25 percent of Americans (1969-78) received some welfare, almost half returned to self-sufficiency in a year or two. Only one in 12 receiving welfare in that period depended heavily on it, a group representing only about 2 percent of the overall population. Further, they found that the temporary poor were quite similar to the population as a whole. Required reading for social welfare planners. (G.J. Duncan, *et al*, *Years of Poverty, Years of Plenty* Ann Arbor: ISR Publications, 1984)

Social Class and Heart Disease Linked

One used to think of coronary heart disease (CHD) as a condition of executives, but that may be changing. In this Minnesota study of CHD mortality trends, poverty was the only one among 10 socioeconomic and demographic variables in eight state health service areas that was statistically significant. While unable to explain the finding from their data, the authors note the published association between two CHD risk factors, hypertension and cigarette smoking, with lower social classes. Further research is recommended. (R.F. Gillum, *et al. American Journal of Public Health* 74(4):360-362, 1984)

The Operation Was a Success, But...

Cerebral blood flow (CBF) was significantly reduced postoperatively ($p < 0.001$) in 37 Danish patients who underwent cardiac surgery requiring extracorporeal circulation (heart-lung machine). In 11 of these patients one year after surgery, CBF was still slightly less than preoperative levels. Psychosocial and cognitive tests were not performed. Total clinical findings, however, were suggestive of diffuse brain damage following these cardiac operations. (L. Henriksen, *Lancet* 1:816-820, 14 April 1984)

Self-Care, a Cost-Effective Alternative

When appropriately applied, self-care can save medical care dollars, as this study showed. A controlled clinical trial was conducted of self-care education of patients in a health maintenance organization (HMO). Reductions in total medical visits (17 percent) and minor illness visits (35 percent) occurred in three study groups, compared to control groups. For every dollar spent on self-care education, the HMO saved an estimated $2.50 to $3.50. Variations in program design and intervention were used: telephone calls, nurse counseling, written materials. Targeting to high utilizer patients may further increase efficiency. (D.M. Vickery, *et al. JAMA* 250 (21):2952-2956, 2 December 1983)

Adolescent Health, 1984: Fears of War

American young people are aware of the threat of nuclear war and many experience anxiety that may affect their mental wellbeing. In this study 5,572 Finnish adolescents answered 108 questions, mostly related to their present and future life, specifically hopes and fears. It was found that for 12-year-olds, war represented 80 percent of their total fears, and that peace ranked second and only slightly behind work and employment in the category of hopes. Finland, a neutral country, has no nuclear weapons. Should not findings such as these become a priority item for the world's mental health agenda? (T. Solantaus, *et al. Lancet* 1:784-785, 7 April 1984)

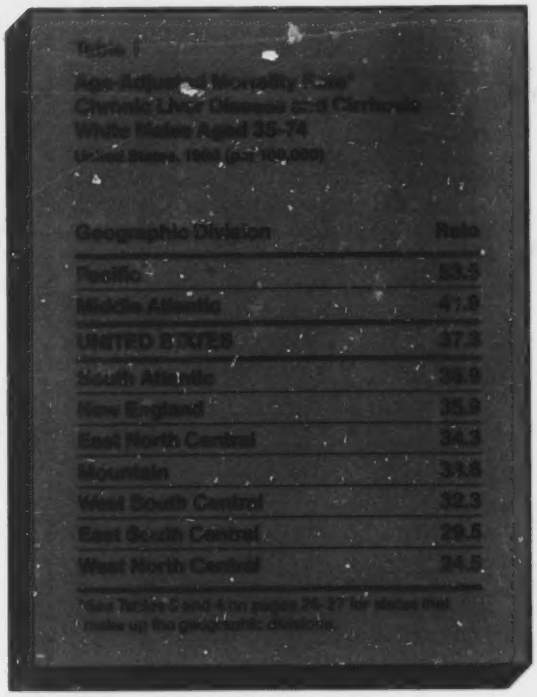
REGIONAL VARIATIONS IN MORTALITY FROM CIRRHOSIS OF THE LIVER

During 1983 about 28,000 people in the United States died from chronic liver disease and cirrhosis. This is a slight increase from the estimated total of 27,250 in 1982, but less than the final count of 29,308 in 1981 or that of 30,583 in 1980. Over the past few years, the age-adjusted mortality rate from chronic liver disease and cirrhosis has shown improvement as well, declining to 10.4 per 100,000 population in 1982 from 11.4 per 100,000 in 1981 and from 12.2 per 100,000 in 1980. In 1981 the age-adjusted mortality rate from this disease among men was more than twice that of women, and the disparity between people of all other races and whites was somewhat less.

In the United States, mortality from chronic liver disease and cirrhosis currently ranks as the 9th leading cause of death, although it accounts for just 1½ percent of all fatalities. However, among people aged 35-64, mortality from this disease is exceeded only by that from diseases of the heart, cancer, cerebrovascular diseases and accidents. Cirrhosis is an insidious disease; many of its victims are asymptomatic, appear to be normal, well-nourished and in good health. Yet it is known that the vast majority of cases are secondary to chronic alcohol abuse. Cirrhosis may also be induced by chemicals, can follow the occurrence of certain infections—such as viral hepatitis Type B or congenital syphilis—can be congenital, and in some instances develops after intestinal bypass operations or biliary obstructions.

"In 1981, the age-adjusted mortality rate from cirrhosis of the liver among men was more than twice that of women."

This article on chronic liver disease and cirrhosis (International Classification of Diseases, Ninth Revision, Code 571) is the fourth in a series of analyses of regional patterns of mortality from leading causes of death.[1-3] In each of the previous studies there were significant geographic variations in the death rates. Therefore, the similar finding(s) in this study were not unexpected.



Pacific States Highest Mortality; West North Central Lowest

Table 1 presents the 1980 age-adjusted mortality rates for white males aged 35-74, by geographic divisions. As is evident from the table, the age-adjusted death rate for the United States was 37.3 per 100,000 population. In comparison, the age-adjusted mortality rates for the country's nine geographic areas ranged from a high of 53.5 per 100,000 in the Pacific division to a low of

24.5 per 100,000 in the West North Central division, a difference of 118.4 percent.

Among white females aged 35-74, the mortality pattern was similar to that for males: namely, the age-adjusted mortality rate was highest among women who resided in the Pacific States and lowest for those who lived in the West North Central division of the country. The death rates were 26.2 per 100,000 and 10.6 per 100,000, respectively—representing a disparity of 147 percent. Women residing in the East South Central area also experienced substantially lower mortality than the United States average. Table 2 shows the relative standings of the white female age-adjusted mortality rates from chronic liver disease and cirrhosis.

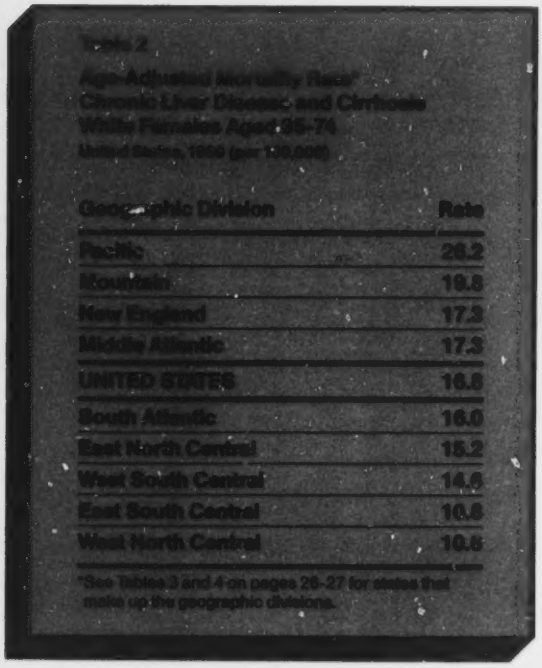


Table 2
Age-Adjusted Mortality Rates* from Chronic Liver Disease and Cirrhosis for White Females Aged 35-74
United States, 1980 (per 100,000)

Geographic Division	Rate
Pacific	26.2
Mountain	19.8
New England	17.3
Middle Atlantic	17.3
UNITED STATES	16.8
South Atlantic	16.0
East North Central	15.2
West South Central	14.8
East South Central	10.8
West North Central	10.6

*See Tables 3 and 4 on pages 26-27 for states that make up the geographic divisions.

Age-Adjusted Rates by State

Among individual states the age-adjusted mortality rate for white males 35-74 years of age in California—60.0 per 100,000—was more than four times that in South Dakota (14.8 per 100,000). Other areas in which the death rate from cirrhosis was more than 25 percent greater than the national average included the District of Columbia, Nevada, New York and Rhode Island. On the more favorable side, Idaho, Arkansas, Nebraska, Iowa, Kansas and Minnesota joined South Dakota in experiencing age-adjusted mortality rates that were just two-thirds or less than the figure for the country as a whole. Figure A presents the five geographic areas with the highest and lowest white male mortality rates from chronic liver disease and cirrhosis.

"Cirrhosis is insidious; many of its victims are asymptomatic, appear to be normal, well-nourished and in good health."

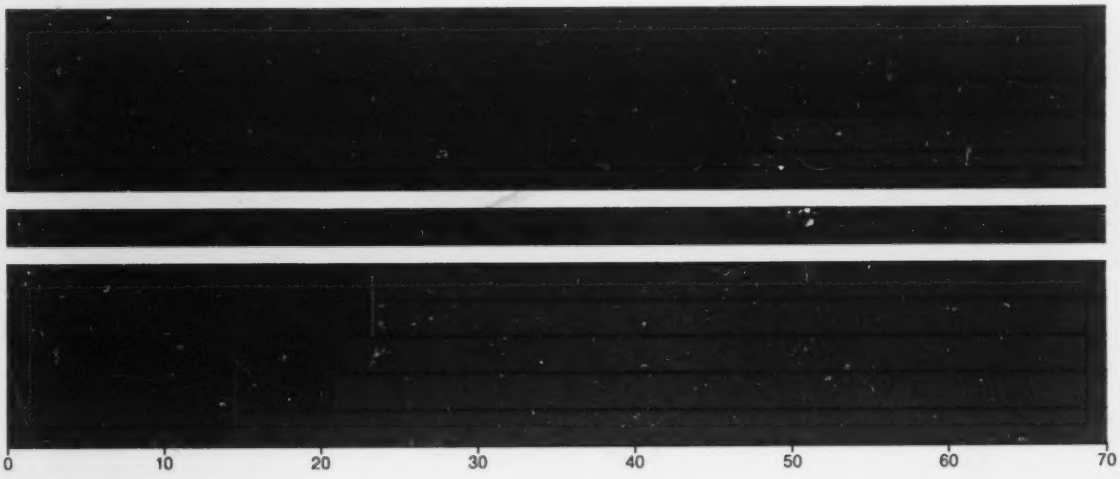
Figure B shows the comparable analyses for white females. As may be seen, the states with the lowest age-adjusted death rates were Iowa, Alabama, Nebraska, Minnesota and Tennessee. In Iowa the death rate was just one-fifth the rate of 37.1 per 100,000 experienced in Nevada. In 1980 California, Hawaii, New Hampshire and Delaware also recorded age-adjusted mortality rates above 25 per 100,000.

Death from chronic liver disease and cirrhosis was not a frequent event among white men aged 35-44 who resided in the West North Central states; the mortality rate from this disease was just 8.9 per 100,000. In fact, during 1980, there were 10 or fewer deaths from cirrhosis in five of the seven states in this geographic area. This favorable experience also occurred in 14 other states. In addition, in Wisconsin, Maryland, Oregon, Minnesota and South Carolina, the mortality rate was less than 9.0 per 100,000. On the other hand, in the Pacific division, the mortality rate was 20.7 per 100,000. California reported a death rate of 25.3 per 100,000 and that was even exceeded by the experience in New York, Nevada and New Mexico; in the latter state, the rate of 32.0 per 100,000 was more than twice the national average for this age group.

Figure A-Geographic Areas With Highest and Lowest Mortality From Chronic Liver Disease and Cirrhosis

White Males Aged 35-74, United States, 1980

Age-Adjusted* Death Rate per 100,000



*Adjusted on basis of age distribution of the United States total population, 1940

Young White Women Experience Low Rates

Relatively few white women aged 35-44 died from cirrhosis and related causes in the United States during 1980. In 32 states there were 10 or fewer deaths. The lowest mortality rate from cirrhosis occurred in the East South Central division—3.9 per 100,000—and the highest—11.6 per 100,000—was registered in the Pacific states. In California the mortality rate was 13.5 per 100,000.

At ages 45-54 the lowest mortality from cirrhosis and related diseases among white males occurred in the West North Central division—25.1 per 100,000. Iowa, Nebraska, South Carolina and Arkansas all reported death rates of 24.0 per 100,000 or less. At the same time, mortality rates more than twice as large—in excess of 50 per 100,000—were experienced in Nevada, California, West Virginia, New Mexico and Rhode Island. In the Pacific division the death rate from cirrhosis —60.4 per 100,000—was markedly larger than in the Middle Atlantic states—the geographic division with the next highest death rate.

Similar to the rates found for males, female mortality at ages 45-54 was highest in the Pacific and lowest in the West North Central states. By state, the death rates were highest in Nevada, Delaware, Montana and California—32 per 100,000 or higher—and lowest in North Dakota, Minnesota and Alabama—less than 10 per 100,000.

Among white males aged 55-64 and for those 65-74 years of age, the Pacific division was once again the geographic area with the highest mortality rate. In like manner the West North Central division experienced the lowest death rate from chronic liver disease and cirrhosis. For each age group, the mortality rates were a little over 80 per 100,000 in the Pacific states and were about half as large in the West North Central area. For both age groups the national average was roughly 60 per 100,000.

Men Aged 55-64 Living in District of Columbia Experience Highest Rates

For males ages 55-64 the death rate in the District of Columbia—namely, 168.3 per 100,000—was substantially higher than the rate in California—91.2 per 100,000—the state with the next highest mortality rate. California also experienced the second highest mortality rate at ages 65-74; namely, 89.7 per 100,000. For this age group Delaware reported a mortality rate of 94.3 per 100,000. Men aged 55-64 and 65-74 residing in Arkansas during 1980 experienced the lowest death rate from cirrhosis. The death rate in Kansas was also very low among those aged 65-74. For white males 10 years younger, favorable death rates were reported in Minnesota, Nebraska, Missouri and Mississippi—40 per 100,000 or less.

The lowest mortality from chronic liver disease and cirrhosis among white women aged 55-64 was recorded in the East South Central division. At ages 65-74 the West North Central states had the distinction of having the best mortality experience. On the other hand, the Pacific division experienced the highest death rates at ages 55-64 and 65-74—just as it had for the two previous age groups.

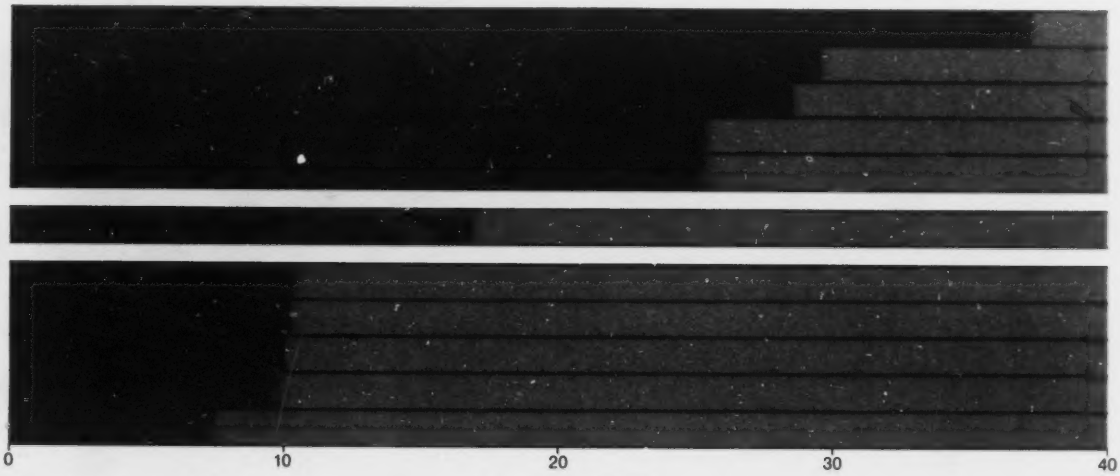
White females 55-64 years of age residing in Nevada had a mortality rate from cirrhosis of 57.9 per 100,000, followed by that in New Mexico and California. California also recorded the third highest death rate among women 10 years older—just slightly lower than the rate in Nevada and New Hampshire. The lowest mortality rate from cirrhosis among women aged 55-64 was reported in Kentucky, while at ages 65-74 Arkansas recorded the most favorable experience.

For each of the four age-specific groups mentioned before, Figure C shows the geographic areas with either the most or least favorable mortality experience. Complete details used for the analyses are given in Tables 3 and 4.

Figure B-Geographic Areas With Highest and Lowest Mortality From Chronic Liver Disease and Cirrhosis

White Females Aged 35-74, United States, 1980

Age-Adjusted* Death Rate per 100,000



*Adjusted on basis of age distribution of the United States total population, 1940

Table 3—Mortality From Cirrhosis of the Liver Among White Men
United States—1980

Area	Death Rate per 100,000 Ages 35-74*	Ages 35-44	Ages 45-54	Ages 55-64	Ages 65-74
UNITED STATES	37.3	14.7	39.1	57.7	64.4
NEW ENGLAND	35.9	14.2	32.5	52.6	79.1
Maine	38.2	†	40.8	55.9	64.4
New Hampshire	31.7	†	29.5	42.8	82.8
Vermont	34.0	†	†	62.3	†
Massachusetts	36.3	16.2	30.7	51.9	82.1
Rhode Island	47.0	†	53.7	65.5	84.9
Connecticut	32.7	11.7	26.3	49.9	80.3
MIDDLE ATLANTIC	41.9	18.7	41.8	61.2	76.4
New York	48.5	25.9	48.3	68.6	80.8
New Jersey	37.0	13.4	36.5	56.9	73.4
Pennsylvania	36.0	12.2	36.6	54.4	72.4
EAST NORTH CENTRAL	34.3	12.8	35.2	52.7	63.2
Ohio	30.3	9.5	31.0	48.3	58.6
Indiana	29.6	9.0	32.7	48.4	49.7
Illinois	40.1	18.7	40.8	55.7	74.2
Michigan	39.1	15.5	40.3	63.5	63.2
Wisconsin	26.6	6.3	26.1	40.7	63.0
WEST NORTH CENTRAL	24.5	8.9	25.1	38.6	44.4
Minnesota	24.0	8.3	27.2	34.1	44.7
Iowa	23.3	†	20.1	44.4	45.0
Missouri	26.8	12.7	26.2	37.4	50.9
North Dakota	31.9	†	†	57.6	†
South Dakota	14.8	†	†	†	†
Nebraska	23.3	†	21.0	34.7	54.7
Kansas	23.7	†	26.3	41.1	34.5
SOUTH ATLANTIC	36.9	13.6	39.8	59.3	59.6
Delaware	46.2	†	45.4	61.2	94.3
Maryland	31.3	7.1	25.9	54.3	75.6
District of Columbia	59.2	†	†	168.3	†
Virginia	34.7	9.9	42.2	47.3	66.6
West Virginia	46.5	15.0	63.6	62.1	69.8
North Carolina	33.9	18.5	31.8	58.4	42.4
South Carolina	28.6	8.4	22.8	60.3	48.4
Georgia	34.9	10.8	39.9	60.3	50.2
Florida	42.1	18.6	47.7	63.4	60.8
EAST SOUTH CENTRAL	29.5	12.0	30.1	46.8	49.3
Kentucky	30.2	15.0	29.8	42.4	55.1
Tennessee	30.5	12.2	30.2	54.5	44.4
Alabama	28.4	10.0	30.0	45.4	48.9
Mississippi	27.3	†	30.3	39.9	49.9
WEST SOUTH CENTRAL	32.3	11.6	33.8	53.5	52.6
Arkansas	21.7	12.1	24.0	31.9	27.0
Louisiana	35.1	14.5	30.5	54.4	73.7
Oklahoma	26.1	†	27.7	50.9	42.1
Texas	35.1	12.3	37.8	58.1	56.1
MOUNTAIN	33.6	15.2	37.2	50.2	50.4
Montana	27.0	†	†	61.8	50.8
Idaho	20.8	†	†	53.5	†
Wyoming	37.2	†	†	†	†
Colorado	29.8	15.9	26.1	47.8	48.4
New Mexico	46.6	32.0	55.6	47.8	64.9
Arizona	33.6	14.4	41.5	42.5	54.5
Utah	25.7	†	35.5	43.2	†
Nevada	57.8	26.9	70.4	81.6	76.3
PACIFIC	53.5	20.7	60.4	82.3	83.3
Washington	32.9	9.6	32.3	55.2	64.6
Oregon	39.2	8.2	49.7	60.2	67.7
California	60.0	25.3	67.5	91.2	89.7
Alaska	30.9	†	†	†	†
Hawaii	43.6	†	†	†	†

*Adjusted on basis of age distribution of the United States total population, 1940.
†Rates not shown—10 or less deaths.

Source of basic data: Mortality figures from Division of Vital Statistics, National Center for Health Statistics—rates computed in the Health and Safety Education Division of the Metropolitan Life Insurance Company.

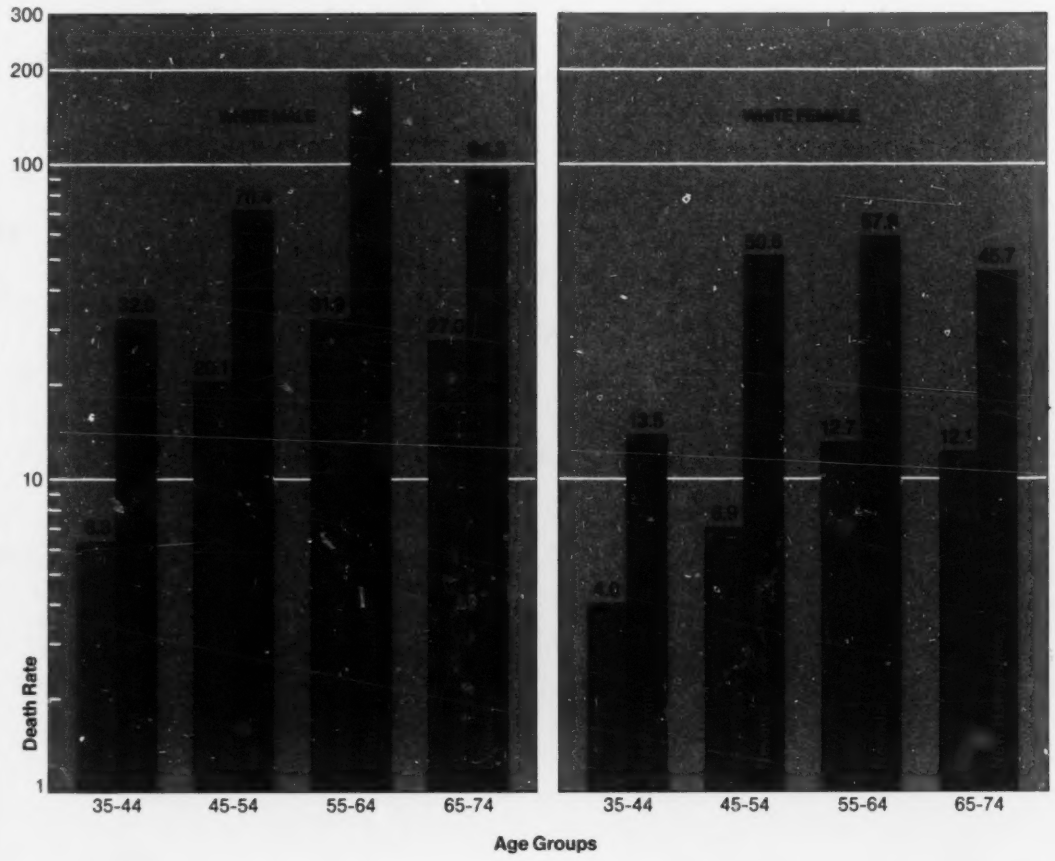
Table 4—Mortality From Cirrhosis of the Liver Among White Women
United States—1980

Area	Death Rate per 100,000 Ages 35-74*	Ages 35-44	Ages 45-54	Ages 55-64	Ages 65-74
UNITED STATES	16.8	6.7	18.0	25.6	28.1
NEW ENGLAND	17.3	7.0	17.4	28.1	29.0
Maine	14.6	†	†	23.0	30.4
New Hampshire	25.3	†	28.8	38.4	45.7
Vermont	13.2	†	†	†	†
Massachusetts	19.2	9.7	19.1	29.5	29.8
Rhode Island	15.3	†	†	32.8	†
Connecticut	13.9	†	14.2	24.4	26.8
MIDDLE ATLANTIC	17.3	7.9	16.5	25.7	32.1
New York	20.3	9.5	20.9	30.9	32.6
New Jersey	18.4	8.4	16.5	26.7	37.9
Pennsylvania	12.6	5.4	10.7	18.6	28.2
EAST NORTH CENTRAL	15.2	6.4	15.9	22.3	27.1
Ohio	15.2	6.0	16.1	21.2	29.3
Indiana	12.7	†	10.3	23.2	28.3
Illinois	15.1	6.4	17.3	22.3	22.8
Michigan	17.4	7.8	17.1	26.0	31.5
Wisconsin	14.5	8.4	16.4	17.1	23.4
WEST NORTH CENTRAL	10.6	4.3	11.1	16.2	18.4
Minnesota	10.2	5.0	8.5	13.6	23.6
Iowa	7.4	†	†	14.5	14.2
Missouri	12.1	6.9	12.2	17.9	17.5
North Dakota	11.7	†	†	†	†
South Dakota	11.2	†	†	†	†
Nebraska	10.0	†	17.7	†	†
Kansas	11.9	†	14.4	21.2	14.9
SOUTH ATLANTIC	16.0	5.0	18.9	25.0	25.7
Delaware	25.3	†	43.1	†	†
Maryland	13.4	6.5	16.2	17.0	20.3
District of Columbia	†	†	†	†	†
Virginia	14.5	†	16.7	24.9	26.1
West Virginia	13.2	†	11.9	27.3	13.8
North Carolina	12.1	†	14.7	21.7	20.5
South Carolina	14.1	†	13.8	20.5	33.7
Georgia	13.7	6.4	14.7	19.5	22.5
Florida	21.1	7.4	27.1	31.4	28.7
EAST SOUTH CENTRAL	10.8	3.9	12.1	15.6	20.0
Kentucky	11.3	†	12.3	12.7	28.9
Tennessee	10.3	†	11.9	15.8	15.8
Alabama	9.8	†	8.8	16.4	18.1
Mississippi	13.1	†	18.4	19.2	15.8
WEST SOUTH CENTRAL	14.6	4.8	15.9	24.6	23.2
Arkansas	10.7	†	12.2	18.1	12.1
Louisiana	16.7	7.8	18.6	20.0	32.0
Oklahoma	11.3	†	12.4	16.4	17.4
Texas	15.8	4.0	16.7	29.3	25.0
MOUNTAIN	19.8	7.7	24.6	29.1	27.1
Montana	21.6	†	34.0	†	†
Idaho	11.9	†	†	†	†
Wyoming	17.8	†	†	†	†
Colorado	19.5	9.6	25.6	18.8	34.3
New Mexico	20.8	†	†	46.0	31.6
Arizona	19.7	10.2	20.5	30.8	26.5
Utah	13.0	†	†	†	†
Nevada	37.1	†	50.6	57.9	44.6
PACIFIC	26.2	11.6	28.3	39.3	41.5
Washington	17.1	7.2	19.7	22.8	29.6
Oregon	15.4	†	13.4	22.2	36.8
California	29.4	13.5	31.7	44.6	44.5
Alaska	†	†	†	†	†
Hawaii	28.4	†	†	†	†

*Adjusted on basis of age distribution of the United States total population, 1940.
†Rates not shown—10 or less deaths.

Source of basic data: Mortality figures from Division of Vital Statistics, National Center for Health Statistics—rates computed in the Health and Safety Education Division of the Metropolitan Life Insurance Company.

Figure C–Geographic Areas With Highest and Lowest Mortality From Chronic Liver Disease and Cirrhosis
White Population Aged 35-74, By Sex, United States, 1980
Death Rate per 100,000



Socioeconomic Factors Linked to Regional Differences

Numerically, the death toll from chronic liver disease and cirrhosis is not very large when compared with that from heart disease or cancer. However, it is a major cause of death among people 35-74 years of age and furthermore, as an acquired disease, it should be preventable. The link to alcohol abuse has been clearly documented. Therefore, increased public awareness of this causal factor could have a significant impact in reducing mortality.

It has been suggested that there is an association between alcohol abuse and state unemployment rates. The correlation between rising socioeconomic status and declining cirrhosis death rates has also been confirmed. Both factors may explain some of the reported regional mortality differences.

[1]Regional Variations in Mortality from Diseases of the Heart. *Statistical Bulletin* 65:8-14, Jul-Sep 1984.

[2]Geographic Variations in Mortality from Cancer. *Statistical Bulletin* 63:2-6, Jul-Sep 1982.

[3]Regional Variations in Mortality from Diabetes. *Statistical Bulletin* 63:8-11, Jan-Mar 1982.

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Re: Gains in U.S. Life Expectancy
Statistical Bulletin, Vol. 65, pp. 18-19, Jul-Sep 1984.

Table 1—Expectation of Life (on page 19) provides the most recent information on this subject. However, the text on page 18 does not reflect all these changes. Readers who would like the completely updated version may write to SB at the address on the inside cover.

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HISTORICAL PERSPECTIVES

25 YEARS AGO

IN THE **1959** STATISTICAL BULLETIN

Metropolitan statisticians focused attention on the health problems of persons aged 65 and over, and reported that they had benefited from the advances in medical knowledge and practice. Considerable progress had been made in controlling some of the chronic and infectious diseases such as diabetes and pneumonia. In addition, risks associated with surgery sharply decreased. These advances contributed to improved mortality among persons over 65. The death rate at this age fell from an average of 74.1 per 1,000 in 1935-36 to 61.7 in 1955-56. (Rate for 1980-81 is 51.8 per 1,000 – ed.) (Page 6, March)

In recognition of the approaching sixth White House Conference on Children and Youth, Metropolitan reported that extraordinary progress had been made in improving the health of children and youth in the U.S. since the first conference held 50 years earlier. Mortality at the younger ages had been significantly reduced because of the control of the four principal communicable childhood diseases – measles, scarlet fever, whooping cough and diphtheria. The introduction of antibiotics, broad-scale immunization programs, and the marked improvement in environmental sanitation helped to reduce the incidence of communicable diseases. Chances of survival also increased. In 1910 one out of every five babies failed to survive to age 21; by 1959 the proportion was one out of 25. (Currently, the proportion is one out of 50 – ed.) (Page 6, February)

Metropolitan reported that hospital services had expanded to include: training of physicians and nursing personnel, serving as centers for community health education and preventive medicine, and advancing medical knowledge. For example, Columbia-Presbyterian Medical Center, in cooperation with Metropolitan Life Insurance Company, undertook a benchmark study on the causes and means of preventing accidents in childhood – the leading cause of death in that period of life. Hospital and medical costs were being reimbursed increasingly by voluntary health insurance. As of mid-1958, about 123 million people in the U.S. were covered for hospital expense – 10 times the number in 1940. Surgical expense coverage had grown even more rapidly during the period – from 5.3 to 111 million. (Page 1, April)

The number of marriages continued to decline in 1958. The rate of 8.4 per 1,000 was the lowest recorded since 1932. Statisticians blamed the recession for the downswing in marriages, but anticipated that they would soon rebound to the pre-recession level. (Except for 1974, 1975 and 1983, the number of marriages has increased every year since 1958 -ed.) The wide geographic variation in the trend of marriages from 1957 to 1958 was largely attributed to changes in marriage regulations. For example, in Indiana (where a waiting period had been instituted) the number of marriages decreased by 45 percent; in Mississippi (where the age for marriage was raised) the number fell by 42 percent. (Page 1, May)

Metropolitan reported on various population surveys showing a decline in heart disease death rates among white persons aged 45-64 between 1949 and 1956. The Framingham, Mass., study showed the rate for women to be less than half that among men. DuPont Company found that, by occupation, the executive-professional group and factory workers had approximately the same incidence rate – about one-fourth less than clerical workers. It was noted that a number of large business organizations found that their cardiac-patient employees were able to resume work after recovery with little or no limitation of activity. In addition, it was mentioned that the outlook for the middle-aged person with cardiac disease could be improved by prompt medical care, correction of overweight and adherence to appropriate dietary and living habits. (Page 1, February)

The upsurge in births that started after the end of World War II remained high. For five successive years, (1954-58) the annual number of births exceeded four million, totaling almost 21 million. This greater fertility was sustained by families having a second or subsequent child. The rates for fourth and higher birth orders, however, were still below those that prevailed up to World War I. (Page [illegible] February)

SB-1 (10-84) Printed in U.S.A.